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EXAMINER	
JONES, DAVID	

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/680,543	Applicant(s) REEVES ET AL.
	Examiner David L Jones	Art Unit 2622

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-12 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1-12 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on 04 October 2000 is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-2, 5-6, and 9-10 are rejected under 35 U.S.C. 102(b) as being anticipated by Frame et al. (US 4,590,520).

Regarding claim 1, Frame et al. discloses an image digitizing system comprising:

a spatial array of sensors (fig. 1, #1000, column 6, lines 22-38) for converting a visual image to signals, each of said sensors providing a respective signal;

a signal converter (combination of SLAB 2000, small spot defect detector 3000, and dead spot fill-in processor) for converting said signals into pixel data describing an array of pixels, each of said pixels being associated with a respective one of said sensors, the pixel data associated with most of said pixels being a function of signals provided by the respective sensors, the pixel data associated with at least one of said pixels not being a function of a signal from the respective sensor but being a function of one or more signals from neighboring sensors.

Frame discloses in column 9, lines 62-68, and column 10, lines 1-7, that the system looks for dead spot defects, when one is detected the system holds the last valid signal to fill-in the dead spot.

Regarding claim 2, Frame et al. discloses (column 9, lines 62-68, and column 10, lines 1-7), an image digitizing system, wherein multiple pixels are associated with each sensor so that:

for most sensors, all pixels associated with that sensor have values that are functions of the signal provided by that sensor; and for said least one sensor, all pixels associated therewith have values that are not functions of the signals provided by that sensor but are functions of signals provided by neighboring sensors.

In accordance with the "calibrate" mode of Frame et al. (column 9, lines 35-68 and column 10, lines 1-7), the pre-stored digital sensitivity correction coefficients are stored in memory 112 for each pixel kand these have been schematically illustrated in bar graph format at line (d) on FIG. 5. As will be observed, the pre-stored correction coefficient associated with pixels containing the dead spot are of abnormal values. Since the dead spot does not extend very far into pixel P1, its correction coefficient C1 is only slightly different from the nominal values associated with normal or active pixels P3, P4, and P5 as depicted in FIG. 5. However, since most of pixel P2 is occupied by the dead spot, its correction coefficient C2 is almost at a limit value (e.g., in the example being described it is assumed that correction coefficients have a dynamic range extending from 0 to 1.0). It should be noted that the schematically depicted correction coefficients at line (d) of FIG. 5 would actually have been fetched from the memory 112 at least one clock cycle earlier than the real time occurrence of the pixel with which they are associated. In this manner, the onset of the dead spot can be detected by the excessive rate of change between coefficients C1 and C2 in sufficient time to actually begin the sample and hold fill-in enabling signal (e.g., as shown in line (e) of FIG. 5) in real-time at the beginning of pixel P1. The termination of the dead spot is similarly detected by the abrupt transition (in the reverse direction) between coefficients C2 and C3. Here, the termination of the fill-in enabling signal is delayed to occur in real-time at the end of pixel P2 as also depicted in FIG. 5. For the

duration of the fill-in enabling signal shown at line (e) of FIG. 5, the read time video signal is switched out and replaced by a synthesized approximately correct video signal. As depicted in line (f) of FIG. 5, the result is a real time video signal with filled in dead spots where, in the exemplary embodiment, the dead spot is filled simply by holding constant the last "valid" video signal level which occurred at the time the fill-in enabling signal was initiated.

Regarding claim 5, Frame et al. discloses (fig. 1, #1000, column 6, lines 22-38) an image digitizing method comprising:

calibrating an array of sensors so as to distinguish "good" and "bad" sensors;

using said array to convert a visual image to signals;

converting said signals to image data including pixel values associated with an array of pixels, each pixel corresponding to a respective one of said sensors, pixel values associated with a good sensor being a function of the signal provided by that good sensor, pixel values associated with a bad sensor not being a function of the signal provided by that bad sensor but being a function of at least one signal provided by a neighboring good sensor.

Frame discloses in column 9, lines 62-68, and column 10, lines 1-7, that the system looks for dead spot defects, when one is detected the system holds the last valid signal to fill-in the dead spot. And that during calibration as detailed in column 7, lines 6-50, the system looks for a bad signal and fills in the bad signal with a good signal from the previous pixel.

Regarding claim 6, Frame et al. discloses (fig. 1, #1000, column 6, lines 22-38) an image digitizing method, wherein said image data describes a series of raster lines, each of said raster lines including a series of said pixels, all pixels associated with said bad sensor having

values determined not as a function of a signal provided by said bad pixel but as a function of said neighboring good sensor.

In accordance with the "calibrate" mode of Frame et al. (column 9, lines 35-68 and column 10, lines 1-7), the pre-stored digital sensitivity correction coefficients are stored in memory 112 for each pixel kand these have been schematically illustrated in bar graph format at line (d) on FIG. 5. As will be observed, the pre-stored correction coefficient associated with pixels containing the dead spot are of abnormal values. Since the dead spot does not extend very far into pixel P1, its correction coefficient C1 is only slightly different from the nominal values associated with normal or active pixels P3, P4, and P5 as depicted in FIG. 5. However, since most of pixel P2 is occupied by the dead spot, its correction coefficient C2 is almost at a limit value (e.g., in the example being described it is assumed that correction coefficients have a dynamic range extending from 0 to 1.0). It should be noted that the schematically depicted correction coefficients at line (d) of FIG. 5 would actually have been fetched from the memory 112 at least one clock cycle earlier than the real time occurrence of the pixel with which they are associated. In this manner, the onset of the dead spot can be detected by the excessive rate of change between coefficients C1 and C2 in sufficient time to actually begin the sample and hold fill-in enabling signal (e.g., as shown in line (e) of FIG. 5) in real-time at the beginning of pixel P1. The termination of the dead spot is similarly detected by the abrupt transition (in the reverse direction) between coefficients C2 and C3. Here, the termination of the fill-in enabling signal is delayed to occur in real-time at the end of pixel P2 as also depicted in FIG. 5. For the duration of the fill-in enabling signal shown at line (e) of FIG. 5, the read time video signal is switched out and replaced by a synthesized approximately correct video signal. As depicted in line (f) of

FIG. 5, the result is a real time video signal with filled in dead spots where, in the exemplary embodiment, the dead spot is filled simply by holding constant the last "valid" video signal level which occurred at the time the fill-in enabling signal was initiated.

Regarding claim 9, Frame et al. discloses (fig. 1, #1000, column 6, lines 22-38) an image-digitization method comprising the steps of:

using an array of sensors to generate a series of signals; and

converting said signals into pixel data describing an array of pixels, each of said pixels being associated with a respective one of said sensors, the pixel data associated with most of said pixels being a function of signals provided by the respective sensors, the pixel data associated with at least one of said pixels not being a function of a signal from the respective sensor but being a function of a signal from a neighboring sensor.

Frame discloses in column 9, lines 62-68, and column 10, lines 1-7, that the system looks for dead spot defects, when one is detected the system holds the last valid signal to fill-in the dead spot. And that during calibration as detailed in column 7, lines 6-50, the system looks for a bad signal and fills in the bad signal with a good signal from the previous pixel.

Regarding claim10, Frame et al. discloses (fig. 1, #1000, column 6, lines 22-38) an image digitizing method wherein plural pixels are associated with each of said sensors so that for said at least one of said sensors none of the pixels associated therewith are described by pixel data that is a function of a signal associated with that sensor.

In accordance with the "calibrate" mode of Frame et al. (column 9, lines 35-68 and column 10, lines 1-7), the pre-stored digital sensitivity correction coefficients are stored in memory 112 for each pixel kand these have been schematically illustrated in bar graph format at

line (d) on FIG. 5. As will be observed, the pre-stored correction coefficient associated with pixels containing the dead spot are of abnormal values. Since the dead spot does not extend very far into pixel P1, its correction coefficient C1 is only slightly different from the nominal values associated with normal or active pixels P3, P4, and P5 as depicted in FIG. 5. However, since most of pixel P2 is occupied by the dead spot, its correction coefficient C2 is almost at a limit value (e.g., in the example being described it is assumed that correction coefficients have a dynamic range extending from 0 to 1.0). It should be noted that the schematically depicted correction coefficients at line (d) of FIG. 5 would actually have been fetched from the memory 112 at least one clock cycle earlier than the real time occurrence of the pixel with which they are associated. In this manner, the onset of the dead spot can be detected by the excessive rate of change between coefficients C1 and C2 in sufficient time to actually begin the sample and hold fill-in enabling signal (e.g., as shown in line (e) of FIG. 5) in real-time at the beginning of pixel P1. The termination of the dead spot is similarly detected by the abrupt transition (in the reverse direction) between coefficients C2 and C3. Here, the termination of the fill-in enabling signal is delayed to occur in real-time at the end of pixel P2 as also depicted in FIG. 5. For the duration of the fill-in enabling signal shown at line (e) of FIG. 5, the read time video signal is switched out and replaced by a synthesized approximately correct video signal. As depicted in line (f) of FIG. 5, the result is a real time video signal with filled in dead spots where, in the exemplary embodiment, the dead spot is filled simply by holding constant the last "valid" video signal level which occurred at the time the fill-in enabling signal was initiated.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 3-4, 7-8, and 11-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Frame et al. as applied to claims 1-2, 5-6, and 9-10 above, and further in view of Zhang (US 6,456,261).

Regarding claim 3, Frame et al. discloses an image digitizing system that comprises a spatial array of sensors (fig. 1, #1000, column 6, lines 22-38) for converting a visual image to signals, each of said sensors providing a respective signal, and a signal converter (combination of SLAB 2000, small spot defect detector 3000, and dead spot fill-in processor) for converting said signals into pixel data describing an array of pixels, each of said pixels being associated with a respective one of said sensors, the pixel data associated with most of said pixels being a function of signals provided by the respective sensors, the pixel data associated with at least one of said pixels not being a function of a signal from the respective sensor but being a function of one or more signals from neighboring sensors.

Frame discloses in column 9, lines 62-68, and column 10, lines 1-28, that the system looks for dead spot defects, when one is detected the system holds the last valid signal to fill-in the dead spot, the analog signal is brought in and a detector detects dead spots within the signal and fills in the dead analog signal with the signal from the signal just prior to the dead spot(s).

The system holds the threshold coefficients in memory 112, and uses the value to compare the incoming signal in real time. Although, Frame does not explicitly teach that the signal is converted to a digital signal through an A/D converter, it would have been obvious to one of ordinary skill in the art that the system would be processed as a digital signal.

Whereas, Zhang teaches (fig. 13, column 8, lines 50-67 and column 9, lines 1-22) that the incoming signal is sent through analog signal processing, after that is completed, a 12-bit Analog to Digital (A/D) converter 148 is used for further digital signal processing. In order to get better image representation, 12-bit Field Subtraction 150 and Alternate Field Inversion 152 are done through 12-bit Field RAM 154. By using the 12-bit Look-up table or Gain ROM 156 furnished by the UFPA manufacturing factory, the non-uniformity and dead pixel are corrected by the 12-bit Gain Correction Circuit 158 because the uniformity of UFPA is not even and some pixels are even dead. *The dead pixels must be replaced by their surrounding live pixels*. After the gain correction is done, automatic Brightness Control 160 and B$W to Color image Converter are used. Up to here the digital image processing is finished. Therefore, a 12-bit D/A converter 164 is adopted to let the digital signal return to the analog signal because most displays are analog.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the A/D converter of Zhang to Frame et al.

The suggestion/motivation for doing so would have been to provide smaller solid-state electronics within the system and to provide a more robust system.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the invention of Frame et al. with Zhang to obtain the invention as specified in claim 3.

Regarding claim 4, Frame et al. discloses an image digitizing system that comprises a spatial array of sensors (fig. 1, #1000, column 6, lines 22-38) for converting a visual image to signals, each of said sensors providing a respective signal, and a signal converter (combination of SLAB 2000, small spot defect detector 3000, and dead spot fill-in processor) for converting said signals into pixel data describing an array of pixels, each of said pixels being associated with a respective one of said sensors, the pixel data associated with most of said pixels being a function of signals provided by the respective sensors, the pixel data associated with at least one of said pixels not being a function of a signal from the respective sensor but being a function of one or more signals from neighboring sensors. Further, the system includes sensor calibration values that are two dimensional, with an offset-function (black) value corresponding to an offset function and a scaling-function (white) value corresponding to a scaling function, as taught by Frame (column 7, lines 6-43) if a black or white dead spot is encountered during the "calibration" cycle of the SLAB processor, the stored correction coefficient will correspond to a terminal (i.e., either maximum or minimum) count or value due to the necessarily finite dynamic range capabilities of the SLAB processor (and due to action of the limiting circuit which prevents the index register from rolling over). As shown above the system of Frame is looking for extreme values of either black or white. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made that Frame is doing the same function as set forth in claim 4.

Regarding claim 7, Frame et al. discloses an image digitizing method that comprises a spatial array of sensors (fig. 1, #1000, column 6, lines 22-38) for converting a visual image to signals, each of said sensors providing a respective signal, and a signal converter (combination of

SLAB 2000, small spot defect detector 3000, and dead spot fill-in processor) for converting said signals into pixel data describing an array of pixels, each of said pixels being associated with a respective one of said sensors, the pixel data associated with most of said pixels being a function of signals provided by the respective sensors, the pixel data associated with at least one of said pixels not being a function of a signal from the respective sensor but being a function of one or more signals from neighboring sensors.

Frame discloses in column 9, lines 62-68, and column 10, lines 1-7, that the system looks for dead spot defects, when one is detected the system holds the last valid signal to fill-in the dead spot, the analog signal is brought in and a detector detects dead spots within the signal and fills in the dead analog signal with the signal from the signal just prior to the dead spot(s). The system holds the threshold coefficients in memory 112, and uses the value to compare the incoming signal in real time. Although, Frame does not explicitly teach that the signal is converted to a digital signal through an A/D converter, it would have been obvious to one of ordinary skill in the art that the system would be processed as a digital signal.

Whereas, Zhang teaches (fig. 13, column 8, lines 50-67 and column 9, lines 1-22) that the incoming signal is sent through analog signal processing, after that is completed, a 12-bit Analog to Digital (A/D) converter 148 is used for further digital signal processing. In order to get better image representation, 12-bit Field Subtraction 150 and Alternate Field Inversion 152 are done through 12-bit Field RAM 154. By using the 12-bit Look-up table or Gain ROM 156 furnished by the UFPA manufacturing factory, the non-uniformity and dead pixel are corrected by the 12-bit Gain Correction Circuit 158 because the uniformity of UFPA is not even and some pixels are even dead. *The dead pixels must be replaced by their surrounding live pixels*. After the gain

correction is done, automatic Brightness Control 160 and B$W to Color image Converter are used. Up to here the digital image processing is finished. Therefore, a 12-bit D/A converter 164 is adopted to let the digital signal return to the analog signal because most displays are analog.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the A/D converter of Zhang to Frame et al.

The suggestion/motivation for doing so would have been to provide smaller solid-state electronics within the system and to provide a more robust system.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the invention of Frame et al. with Zhang to obtain the invention as specified in claim 7.

Regarding claim 8, Frame et al. discloses an image digitizing method that comprises a spatial array of sensors (fig. 1, #1000, column 6, lines 22-38) for converting a visual image to signals, each of said sensors providing a respective signal, and a signal converter (combination of SLAB 2000, small spot defect detector 3000, and dead spot fill-in processor) for converting said signals into pixel data describing an array of pixels, each of said pixels being associated with a respective one of said sensors, the pixel data associated with most of said pixels being a function of signals provided by the respective sensors, the pixel data associated with at least one of said pixels not being a function of a signal from the respective sensor but being a function of one or more signals from neighboring sensors. Further, the system includes sensor calibration values that are two dimensional, with an offset-function (black) value corresponding to an offset function and a scaling-function (white) value corresponding to a scaling function, as taught by Frame (column 7, lines 6-43) if a black or white dead spot is encountered during the

"calibration" cycle of the SLAB processor, the stored correction coefficient will correspond to a terminal (i.e., either maximum or minimum) count or value due to the necessarily finite dynamic range capabilities of the SLAB processor (and due to action of the limiting circuit which prevents the index register from rolling over). As shown above the system of Frame is looking for extreme values of either black or white. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made that Frame is doing the same function as set forth in claim 8.

Regarding claim 11, Frame et al. discloses an image digitizing method that comprises a spatial array of sensors (fig. 1, #1000, column 6, lines 22-38) for converting a visual image to signals, each of said sensors providing a respective signal, and a signal converter (combination of SLAB 2000, small spot defect detector 3000, and dead spot fill-in processor) for converting said signals into pixel data describing an array of pixels, each of said pixels being associated with a respective one of said sensors, the pixel data associated with most of said pixels being a function of signals provided by the respective sensors, the pixel data associated with at least one of said pixels not being a function of a signal from the respective sensor but being a function of one or more signals from neighboring sensors.

Frame discloses in column 9, lines 62-68, and column 10, lines 1-7, that the system looks for dead spot defects, when one is detected the system holds the last valid signal to fill-in the dead spot, the analog signal is brought in and a detector detects dead spots within the signal and fills in the dead analog signal with the signal from the signal just prior to the dead spot(s). The system holds the threshold coefficients in memory 112, and uses the value to compare the incoming signal in real time. Although, Frame does not explicitly teach that the signal is

converted to a digital signal through an A/D converter, it would have been obvious to one of ordinary skill in the art that the system would be processed as a digital signal.

Whereas, Zhang teaches (fig. 13, column 8, lines 50-67 and column 9, lines 1-22) that the incoming signal is sent through analog signal processing, after that is completed, a 12-bit Analog to Digital (A/D) converter 148 is used for further digital signal processing. In order to get better image representation, 12-bit Field Subtraction 150 and Alternate Field Inversion 152 are done through 12-bit Field RAM 154. By using the 12-bit Look-up table or Gain ROM 156 furnished by the UFPA manufacturing factory, the non-uniformity and dead pixel are corrected by the 12-bit Gain Correction Circuit 158 because the uniformity of UFPA is not even and some pixels are even dead. *The dead pixels must be replaced by their surrounding live pixels*. After the gain correction is done, automatic Brightness Control 160 and B$W to Color image Converter are used. Up to here the digital image processing is finished. Therefore, a 12-bit D/A converter 164 is adopted to let the digital signal return to the analog signal because most displays are analog.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the A/D converter of Zhang to Frame et al.

The suggestion/motivation for doing so would have been to provide smaller solid-state electronics within the system and to provide a more robust system.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the invention of Frame et al. with Zhang to obtain the invention as specified in claim 11.

Regarding claim 12, Frame et al. discloses an image digitizing method that comprises a spatial array of sensors (fig. 1, #1000, column 6, lines 22-38) for converting a visual image to

signals, each of said sensors providing a respective signal, and a signal converter (combination of SLAB 2000, small spot defect detector 3000, and dead spot fill-in processor) for converting said signals into pixel data describing an array of pixels, each of said pixels being associated with a respective one of said sensors, the pixel data associated with most of said pixels being a function of signals provided by the respective sensors, the pixel data associated with at least one of said pixels not being a function of a signal from the respective sensor but being a function of one or more signals from neighboring sensors. Further, the system includes sensor calibration values that are two dimensional, with an offset-function (black) value corresponding to an offset function and a scaling-function (white) value corresponding to a scaling function, as taught by Frame (column 7, lines 6-43) if a black or white dead spot is encountered during the "calibration" cycle of the SLAB processor, the stored correction coefficient will correspond to a terminal (i.e., either maximum or minimum) count or value due to the necessarily finite dynamic range capabilities of the SLAB processor (and due to action of the limiting circuit which prevents the index register from rolling over). As shown above the system of Frame is looking for extreme values of either black or white. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made that Frame is doing the same function as set forth in claim 12.

Conclusion

5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Frame (US 4,343,021) discloses a method and apparatus for compensating for sensitivity in variations in image sensors.

Kovac (3,904,818) discloses a method and apparatus to detect and overcome a dark current sensor within an array.

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to David L Jones whose telephone number is (703) 305-4675. The examiner can normally be reached on Monday - Friday (7:00am - 3:30pm).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward Coles can be reached on (703) 305-4712. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

David L. Jones

EDWARD COLES
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